

### **CORRELATION OF MAP UNITS**

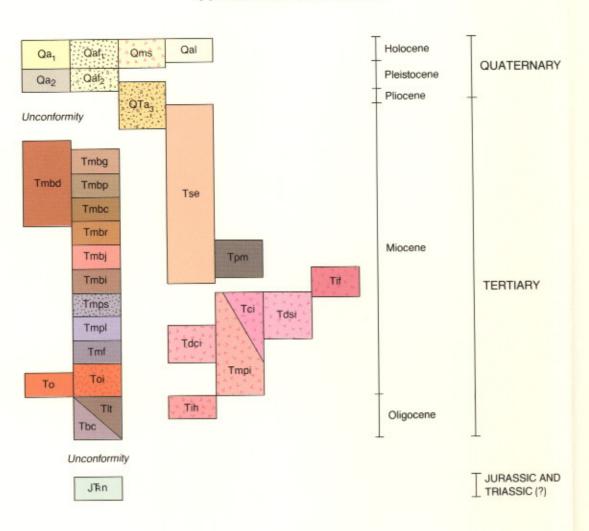


Table 1. Data for K-Ar ages of rocks and alteration minerals in the Marysvale quadrangle, Utah

Sam	ple no.	<sup>1</sup> Rock unit; <sup>2</sup> mineral analyzed	<sup>3</sup> K <sub>2</sub> 0 (%)	*Ar <sup>40</sup> (10 <sup>-10</sup> moles/g)	*Ar <sup>40</sup> (%)	4T	<sup>5</sup> Reference
1.	KA2	Tci; B	7.78		43	22.9	BA
	do	do			36	27.9	do
	do	do	7.30		73	21.9	do
2.	KA7	Tmf; Sa	5.60		90	31.9	do
	do	do			64	28.7	do
3.	KA11	Tci; B	7.45		40	27.7	do
٥.	do	do	7.10		69	25.8	do
4.	KA14	Tmbd; G	3.90		64	18.9	do
	do	do			58	17.7	do
5.	KA17	Tci; B	5.65		40	23.9	do
0.	do	do			38	26.0	do
6.	KA28	Tmbg; G	4.16		32	20.5	do
0.	do	do			56	19.5	do
	KA29	do	4.24		80	20.5	do
7.	M29b	Tci; B	8.53, 8.58	2.678	59.6	21.6 ± 0.9	ST
8.	M30	A; A	6.94, 6.93	2.284	52.0	22.7 ± 1.1	do
9.	M75	Tmbc; Sa	7.38, 7.32	1.977	75.6	18.5 ± 0.8	do
10.	M502	Tmbr; Sa	6.58, 6.60	1.799	72.9	18.9±0.7	CL
11.	M600	Tif, Se	8.24	2.520	81.8	21.1 ± 0.6	do
12.	M704	Tif; Se	7.50	2.229	55.7	20.5 ± 0.7	do

Constants for samples 7-12:  $K^{40} \lambda_{\xi} = 0.581 \times 10^{-10} / \text{yr}; \quad \lambda_{\beta} = 4.962 \times 10^{-10} / \text{yr}; \quad K^{40} / K = 1.167 \times 10^{-4};$ samples 1-6 recalculated by using new decay constants of Steiger and Jäger (1977)

\*Radiogenic argon

-- Not determined or not published

<sup>1</sup>Rock unit symbols are those shown on the map; A, replacement alunite

<sup>2</sup>A, alunite; B, biotite; G, glass; Sa, sanidine; Se, sericite

<sup>3</sup>Samples 7, 8, 11, 12 determined by isotope dilution; samples 9, 10 determined by atomic absorption; samples 1-6, method of determination not known

Age (Ma) ± 2σ; error figures not given by Bassett and others (1963)

5BA, Bassett and others (1963); CL, Cunningham, Ludwig and others (1982); ST, Steven and others (1979)

## SAMPLE DESCRIPTIONS

- Quartz monzonite porphyry from Prospector mine; lat 38°29'45", long 112°12'47". Dacitic lava flow from 2.7 miles east of Marysvale; lat 38°27′14", long 112°10′47".
- Quartz monzonite porphyry from south margin of Central intrusion; lat 38°29'30", long 112°12'48". 4. Black basal vitrophyre of lava flow just west of highway U.S. 89, 2.1 miles north of Marysvale;
- lat 38°28'38", long 112°14'29". 5. Quartz monzonite porphyry from VCA mine; lat 38°29'55", long 112°12'48".
- 6. Black basal vitrophyre of lava flow from north side of Beaver Creek, 1.2 miles northwest of Marysvale; lat 38°27'48", long 112°14'40".
- 7. Altered quartz monzonite porphyry cut by dike of the fine-grained silicic pluton; samples from dump of VCA mine; lat 38°29'55", long 112°12'48". Cunningham, Ludwig and others (1982) noted that this age represents resetting by
- 8. Replacement alunite from Whitehorse mine; lat 38°28'25", long 112°11'27".
- 9. Crystal-rich tuff member of Mount Belknap Volcanics. Collected 0.9 mile west of the junction of Beaver Creek with the Sevier River, lat 38°28'37", long 112°14'57".
- Basal vitrophyre of Red Hills Tuff Member, Royston mine; lat 38°29'03", long 112°12'38".
- 11. Altered fine-grained silicic pluton from a lower level in Plumbic mine; lat 38°29'33", long 112°13'02". Age represents time of uranium mineralization, which postdates the fine-grained silicic pluton. Age not plotted on map.
- 12. Altered fine-grained silicic pluton from the 900-foot level of Freedom No. 1 mine; lat 38°29'50", long 112°12'51". Age represents time of uranium mineralization, which postdates the fine-grained silicic pluton. Age not plotted on map.

Table 2. Data for fission-track ages of rocks in the Marysvale quadrangle, Utah

San	nple no.	<sup>1</sup> Rock unit; <sup>2</sup> Mineral analyzed	<sup>3</sup> ps	<sup>4</sup> pi	<sup>5</sup> φx10 <sup>15</sup>	eТ	(ppm)	<sup>7</sup> Reference
1.	M27A	Tci; A	.206( 429)	.468( 976)	.888	23.3±2.6	17	ST
	do	Tci; Z	8.32 (1464)	10.95 ( 963)	.418	19.0 ± 0.8	840	do
2.	M29B	Tmpi; Z	6.44 ( 865)	20.38 (1368)	1.08	20.4±0.9	610	do
3.	M75	Tmbc: Z	4.44 ( 534)	14.51 (873)	.835	15.3 ± 0.8	560	do
4.	M406	Tif. A	.223( 464)	.650(1355)	1.08	22.1 ± 4.4	17	CL
5.	M408	Tmbd; Z	6.58 ( 609)	12.87 ( 596)	.594	18.1 ± 0.8	620	do
J.	do	Tmbd; A	.187( 393)	.523(1090)	1.08	$23.3 \pm 4.7$	14	do

Constants:  $\lambda_{\rm F} = 7.03 \times 10^{-17}/{\rm yr}$ ;  $K^{40}$   $\lambda_{\rm F} = 0.581 \times 10^{10}/{\rm yr}$ ;  $\lambda_{\rm S} = 4.962 \times 10^{10}/{\rm yr}$ ; atomic abundance,  $K^{40} = 1.167 \times 10^{-4}$ <sup>1</sup>Rock unit symbols are those shown on the map <sup>4</sup>Tracks/cm<sup>2</sup>, induced, x 10<sup>6</sup>; (number of tracks counted)

2A, apatite; Z, zircon

CONTACT

 $^3$ Tracks/cm $^2$ , fossil, x 10 $^6$ ; (number of tracks counted)  $^6$ age (Ma)  $\pm 2\sigma$ <sup>7</sup>CL, Cunningham, Ludwig and others (1982); ST, Steven and others (1979)

- SAMPLE DESCRIPTIONS Quartz monzonite porphyry from dump of Prospector mine; lat 38°29'45", long 112°12'47".
- 2. Altered quartz monzonite porphyry cut by dike of the fine-grained silicic pluton; samples from dump of VCA mine; lat 38°29'55", long 112°12'48". Cunningham, Ludwig and others (1982) noted that this age represents resetting by the fine-grained silicic pluton.
- 3. Crystal-rich tuff member of Mount Belknap Volcanics. Collected 0.9 mile west of the junction of Beaver Creek with the Sevier River; lat 38°28'37", long 112°14'57".
- 4. Fine-grained silicic pluton from 700-foot level of Freedom No. 1 mine; lat 38°29'50", long 112°12'51". Age not plotted
- 5. Glassy rhyolite dike from 700-foot level of Freedom No. 1 mine; lat 38°29′50″, long 112°12′51″. Age not plotted on map.

# SYMBOLS

	2.797.02342741
+ 1?	FAULT—Most are high-angle normal faults. Dashed where approximately located; queried where probable; dotted where concealed. Direction and angle of dip shown, where observed. Bar and ball on downthrown side, where known.

CALDERA — Topographic or structural wall of caldera. Dashed where approximately located, dotted where concealed.

DIKE—Lithology indicated by symbol of equivalent rock unit, in parentheses. d(Tif)

QUARTZ MASS-White, fine- to coarse-grained, locally brecciated quartz. Formed as hot-spring sinter and as replacement masses during wallrock qtz alteration by intrusions. ALTERED ROCK-White, red, and yellow, hydrothermally altered, silicified, and

locally mineralized rock. Chiefly argillic alteration to kaolinite and alunite. Propylitically altered rock not shown.

CENTRAL MINING AREA—Approximate outline of principal uranium mines.

VENT-Inferred central vent area of volcano.

STRIKE AND DIP OF BEDDING

12 Horizontal

STRIKE AND DIP OF FLOW FOLIATION ■ 15.3, 18.5 Ma SAMPLE LOCALITY—Fission-track (bold) or K-Ar dated (see tables 1 and 2).

MAP UNIT  Surficial deposits  Coarse-grained sedimentary rocks  Sevier River Formation		THICKNESS Feet (Meters)		LITHOLOGY	
		Qa <sub>1</sub> , Qaf <sub>1</sub> , Qms, Qal, Qa <sub>2</sub> , Qaf <sub>2</sub>	300 (90)		
		QTa <sub>3</sub>	150(45)	000000000000000000000000000000000000000	
		Tse	450 (135)	3 65 6 50 0 0 0	
	Gray Hills Rhyolite Member	Tmbg	500 (150)		
nics	Porphyritic lava flows	Tmbp	200 (60)	行作信贷	
olca	Crystal-rich tuff member	Tmbc	200 (60)	1272 172-73	
ap V	Dikes, lava flows, and plugs	Tmbd	300 (90)	2/2/2/21	
Mount Belknap Volcanics	Red Hills Tuff Member	Tmbr	600 (180)		
	Joe Lott Tuff Member	Tmbj	400 (120)	D = -V - D - V	
Potassium-rich mafic volcanic rocks		Tpm	100 (30)	2022	
Mount Belknap Volcanics	Crystal-rich volcanic domes and plugs	Tmbi	800 (245)		
2	Sedimentary rocks	Tmps	200 (60)		
ak calde	Lava flows of Monroe Peak	Tmpl	400 (120)	<b>经验</b>	
Monroe Peak caldera	Lava flows of Monkey Flat Ridge	Tmf	600 (180)		
Intracaldera rocks, N	Osiris Tuff	Toi	1100 (335)		
Volcanic rocks of Little Table		Tit	600 (180)	70-40409	
Bullion Canyon Volcanics		Tbc	500 (150)	VA 9 4 9 7 1	

## **DESCRIPTION OF MAP UNITS**

Piedmont-slope deposits—Silt, sand, and gravel on piedmont slopes. Qa<sub>1</sub>

Alluvial-fan deposits-Silt, sand, and gravel in alluvial fans and along Oaf streams that feed fans. Landslide debris-Angular, unsorted material emplaced by mass

Alluvial flood-plain deposits—Silt, sand, and gravel in the flood plain of the Qal

Older piedmont-slope deposits—Dissected remnants of older piedmont-Qa<sub>2</sub> slope deposits

Older alluvial-fan deposits—Dissected remnnants of older alluvial fans. Qaf<sub>2</sub>

conglomerate and pebbly sandstone. Sevier River Formation, undivided—Gray and tan, poorly to moderately consolidated sandstone, conglomerate, siltstone, and claystone,

chiefly deposited in a fluvial environment.

OTa<sub>3</sub>

Tmbr

Tdsi

Tci

Coarse-grained sedimentary rocks—Poorly to moderately consolidated

Gray Hills Rhyolite Member of the Mount Belknap Volcanics-Gray, pink, and red, flow-foliated rhyolite lava flows and dikes.

gray, porphyritic rhyodacitic lava flows and ash-flow tuff. Crystal-rich tuff member of the Mount Belknap Volcanics—Red, gray, and

Porphyritic lava flows of the Mount Belknap Volcanics-Red, pink, and

pink, crystal-rich rhyodacitic ash-flow tuff. Dikes, lava flows, and plugs of the Mount Belknap Volcanics-Gray and

pink, flow-foliated rhyolite dikes, lava flows, and plugs. Red Hills Tuff Member of the Mount Belknap Volcanics-Red, densely

welded, crystal-poor rhyolite ash-flow tuff.

Joe Lott Tuff Member of the Mount Belknap Volcanics-Tan and gray, poorly welded, crystal-poor rhyolite ash-flow tuff.

Potassium-rich mafic volcanic rocks—Black mafic lava flows and scoria. Tpm

Crystal-rich volcanic domes and plugs of Mount Belknap Volcanics-Tan, pink, gray, and purple, crystal-rich rhyolite volcanic domes, lava Tmbi flows, and intrusive feeders.

Fine-grained silicic pluton-Gray and greenish-gray, fine-grained, granodioritic to granitic intracaldera pluton.

Monroe Peak intracaldera sedimentary rocks—Tan, gray, and yellow, soft to moderately resistant sandstone, airfall tuff, and minor lava flows, siltstone, and conglomerate.

Lava flows of Monroe Peak—Gray, pink, and khaki, intracaldera, crystal-Tmpl rich, rhyodacitic lava flows.

Lava flows of Monkey Flat Ridge—Gray, red, tan, and brown, intracaldera, Tmf crystal-poor rhyodacitic to dacitic lava flows.

zonite and quartz monzonite porphyry. Central intrusion-Gray and green, porphyritic or equigranular, intracal-

Durkee Springs pluton-Gray and light-green, intracaldera quartz mon-

Durkee Creek pluton-Light-green and gray, intracaldera monzonite Tdci porphyry.

dera quartz monzonite or monzonite.

Undivided intrusive rocks related to the Monroe Peak caldera-Tan and gray, intracaldera monzonite porphyry and quartz monzonite Tmpi porphyry.

dacitic intracaldera ash-flow tuff.

Osiris Tuff, intracaldera facies-Orange and tan, densely welded rhyo-

Osiris Tuff, outflow facies—Brown and light-gray, densely welded rhyo-To dacitic ash-flow tuff.

Volcanic rocks of Little Table—Green, gray, and red, andesitic lava flows and subordinate flow breccia and volcanic mudflow breccia. TIt

Tih monzonite. Bullion Canyon Volcanics-Gray, green, and brown, heterogeneous, dacitic lava flows and subordinate volcanic mudflow breccia and Tbc

Hoover pluton-Green and gray, holocrystalline, porphyritic quartz

Navajo Sandstone-Light-gray and buff, resistant, crossbedded Jīkn

